RESEARCH PAPER

ANALYSIS OF HYDROCARBON TREATING SYSTEM ON PERFORMANCE OF SPARK-IGNITION FOUR-STROKE ENGINES

Submitted as a Partial fulfillment of The Requirements
for Getting Bachelor Degree of Engineering
in Mechanical Engineering Department

by

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MUHAMMADIYAH UNIVERSITY OF SURAKARTA

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APPROVAL

The research paper entitled "**Analysis of Hydrocarbon Treating System on Performance of Spark Ignition Four-Stroke Engine**", has been agreed by supervisor and authorized by the Director of International Program as partial fulfillment of the requirements for getting the Bachelor Degree of Engineering in Automotive Department of Muhammadiyah University of Surakarta.

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ACCEPTANCE

The Final Project entitle "**Effect of Hydrocarbon Treating System on Performance of Spark-Ignition Four-Stroke Engines**" has been defended in front of examiners team and approved as a partial fulfillment of the requirements for getting the Bachelor Degree of Engineering in Automotive Department of Muhammadiyah University of Surakarta.

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TESTIMONY

With this, I state that there is no plagiarism of the previous works which have been made to get bachelor degree of university and as long as the writer knows that there is also no work or opinion that ever been composed or published by other people, except referred written in this research paper mentioned in bibliography.

Hence, if it is proved that there is mistake in the writer's statements I will be wholly responsible.

Surakarta, July 2011

The writer

Soni Nugroho
D 700 070 007

MOTTO

"A good process will get a good result"

(The Writer)

وَلْتَكُن مِّنكُمْ أُمَّةٌ يَدْعُونَ إِلَى ٱلْخَيْرِ وَيَأْمُرُونَ بِٱلْمَعْرُوفِ

وَيَنْهَوْنَ عَنِ ٱلْمُنكَرِ ۚ وَأُو۟لَٰٓئِكَ هُمُ ٱلْمُفْلِحُونَ ﴿١٠٤﴾

Let there arise out of you a group of people inviting to all that is good (Islam), enjoining Al-Ma'ruf and forbidding Al-Munkar. And it is they who are the successful. (QS Ali Imran:104)

لَا يُكَلِّفُ ٱللَّهُ نَفْسًا إِلَّا وُسْعَهَا ۚ لَهَا مَا كَسَبَتْ وَعَلَيْهَا مَا ٱكْتَسَبَتْ ۗ .....﴿٢٨٦﴾

Allah burdens not a person beyond his scope. He gets reward for that (good) which he has earned, and he is punished for that (evil) which he has earned. (QS Al-Baqarah:286)

Many People say that the intelligence that make the great scientist. They are mistaken, it is the character. (Albert Einstein)

There is a way to make it better, find it.(Thomas A. Edison)

The best person is the person who is the most beneficial for others

(Narrated by Bukhari)

DEDICATION

This research paper is dedicated to:

Allah SWT,
Thanks for the best everything that You have given for me and thanks for Your love that always make me to never give up to do the best.
I believe that You will always give me the best for everything.

My beloved Mom and Dad,
Thanks for your prayer, love and support.
You always give me happiness but often I made you disappointed.
I am sorry and I promise to give you the best in the future.

My Siblings (***Indayana, Beni Iskandar, Nur Prasetyo***),
Thanks for your supports.
It is make me strong to get something more and more.

My Lovely (***Okta Pramita Sukma***),
Thanks for your love, support, spirit, attention and care.
You make my burden lighter.

My all family,
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All my friends,
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15. Those who can not to be mentioned one by one for every helping in accomplishing this research paper. Thanks a lot for all.

The writer realizes that this research paper is far from being perfect, so the writer welcomes any constructive comment, criticism, and suggestion from anyone. Finally, he hopes that this research paper would help the other researchers who are interested in studying translation and enrich the reader's knowledge.

Wassalamualaikum Wr. Wb.

Surakarta, July 2011
The writer

Soni Nugroho

ABSTRACT

SONI NUGROHO. D 700 070 007. EFFECT OF HYDROCARBON TREATING SYSTEM ON PERFORMANCE OF SPARK-IGNITION FOUR-STROKE ENGINES. MUHAMMADIYAH UNIVERSITY OF SURAKARTA. 2011.

Air-fuel mixture in a low air fuel ratio is the main factor that can be manipulated to increase torque and decrease fuel consumption of internal combustion engine but it is difficult to do. One difficulty derived from the fact that if the air-fuel ratio is lowered to the point where the entire fuel charge is consumed during idle rotation, it is difficult to sustain reliable ignition of the charge.

The research investigates the effect of using Hydrocarbon Treating System on spark ignition engine (SI engine) performance and fuel consumption. A four stroke, single cylinder SI engine was used for conducting this study. Performance tests were conducted for engine torque, power and Specific Fuel Consumption (SFC) using HTS with different number of flow rate 0 cc/s, 1.5 cc/s, 2.0 cc/s, 2.5 cc/s and 3.0 cc/s at varying engine speed condition.

The result showed that Hydrocarbon Treating System decrease fuel consumption. Fuel consumption of the engine decreases while the flowrate of the HTS increases. The HTS with the flowrate of 20 cc/s gave the best results for all measured parameters at all mean average values.

Keywords: HTS, air-fuel mixture, torque, power, specific fuel consumption

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